NAME: ……………………………………………………………..… ADM …………….

**JUJA GIRLS HIGH SCHOOL**

**END TERM II EXAMINATIONS 2018**

**FORM ONE**

***Kenya Certificate of Secondary Education (KCSE)***

***232/1***

***Paper 1***

***Physics (Theory)***

***July/August 2018***

***2 Hours***

**Instructions**

* *This paper consists of* ***two*** *sections* ***A*** *and* ***B****.*
* *Answer* ***all*** *the questions in sections* ***A*** *and* ***B*** *in the spaces provided.*
* ***All*** *working* ***must*** *be clearly shown.*
* *Silent non programmable electronic calculators may be used.*

**For Examiner’s Use Only**

|  |  |  |  |
| --- | --- | --- | --- |
| **Section** | **Question** | **Maximum Score** | **Student’s Score** |
| **A** | 1-11 | 25 |  |
| **B** | 12 | 13 |  |
| 13 | 9 |  |
| 14 | 11 |  |
| 15 | 6 |  |
| 16 | 10 |  |
| 17 | 6 |  |
|  **Total Score** | **80** |  |

***SECTION A (25 MARKS)***

1. Define the following terms:
	* + - 1. Basic physical quantities (1mk)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

* + - * 1. Derived physical quantities (1mk)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. State ***two*** factors that determine the choice of the instrument to be used when measuring length. (2mks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. A wire is wound around a test tube closely so that it makes 250 turns. Determine the thickness of the wire if the length of the winding is 20cm. (3mks)

 20cm

...................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................................

1. State ***two*** factors that determine the pressure at a point in a liquid. (2mks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Water spreads on a clean glass slide while on waxed surface of the same glass slide water collect into spherical balls. Explain. (2mks)

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. State ***five*** differences between mass and weight. (5mks)

|  |  |
| --- | --- |
| **Mass**  | **Weight**  |
| ………………………………………………..……………………………………………….. | ……………………………………………… |
| ………………………………………………..……………………………………………….. | ………………………………………………… |
| ………………………………………………..……………………………………………….. | ……………………………………………….. |
| ………………………………………………..……………………………………………….. | ………………………………………………… |
| …………………………………………………………………………………………………… | ……………………………………………….. |

1. Define pressure. (1mk)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. The figure below shows a liquid water manometer. If the gas pressure is 9.8×104 Pa, determine the height, h. (g = 10Nkg-1 , Atmospheric pressure = 1.0 × 105 Pa and Density of water = 103 kgm-3) (3mks)

 Gas

 h 10cm

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. Name ***two*** types of forces which can act between objects without contact (1mk)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. State why a pin floating on water sinks when a detergent is added. (1mk)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. The height of mercury column in a barometer at a certain town is 720mmHg. Find the barometric height if mercury is replaced with kerosene. (Density of mercury is13600kgm-3 and Density of kerosene is 800kgm-3) (3mks)

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

 ***SECTION B (55 MARKS)***

1. (a) State ***two*** factors that affect pressure exerted by solid objects. (2mks)

……………………………………………………………………………………………………………………………………………………………………………………………………

(b) A girl wearing shoes whose heels are sharp pointed is more likely to damage a wooden floor than an elephant is. Explain. (2mks)

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(c) A rectangular concrete block measures 40cm by 30cm by 20cm and has a mass of 30kg. Calculate:

 i) Weight of the concrete block. (3mks)

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

 ii) The maximum pressure it can exert through its surfaces. (3mks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………….....

 iii) The minimum pressure it can exert through its surfaces. (3mks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

1. (a) State ***one*** advantage of using a density bottle to measure the density of a substance.(1mk)

……………………………………………………………………………………………………………………………………………………………………………………………………

(b) A density bottle of volume 50cm3 is 23.3g when empty. A liquid is poured into the bottle and the total mass is 60.7g. Determine:

 i) Mass of the liquid in the density bottle (2mks)

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

 ii) Volume of the liquid (1mk)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

 iii) Density of the liquid (3mks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

(c) After filling the density bottle with the liquid, state ***two*** precautions that must be taken before measuring its total mass. (2mks)

…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

14) (a) Why is mercury preferred over water as a barometric liquid. (1mk)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

 (b) What is a toricellian vacuum? (1mk)

………………………………………………………………………………………………………………………………………………………………………………………………………………

 (c) Using a suitable diagram, explain how to verify existence of a toricellian vacuum in a simple mercury barometer. (3mks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

 (d) What would be the effect on the barometric height if a tube with a large diameter was used? Give reasons for your answer. (2mks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

 (e) State an advantage of the fortin barometer over the simple mercury barometer. (1mk)

………………………………………………………………………………………………………………………………………………………………………………………………………………

 (f) The reading on a mercury barometer at Mombasa is 760mm. calculate the pressure at Mombasa in Nm-2. (Density of mercury is 13600kgm-3) (3mks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

15) The figure below shows a set up used by a group of students to investigate Brownian motion in liquids. Use it to answer the questions that follow:

 Observer

 Hand lens

 Transparent lid

 Pollen grains

 Cold water

 (a) What is Brownian motion? (1mk)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

 (b) State the observation made by the observer with the help of the hand lens. (1mk)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

 (c) Account for the observation in (a) above. (1mk)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

 (d) What changes would take place if warm water was used in place of the cold water? Give a reason for your answer. (2mks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

 (e) State the kinetic theory of matter. (1mk)

………………………………………………………………………………………………………………………………………………………………………………………………………………

16) Complete the table below by naming the correct type of force for each type of work to be done. (10mks)

|  |  |
| --- | --- |
| **Work to be done** | **Type of force** |
| Causes sea and ocean tides |  |
| A racing car negotiating a bend |  |
| A garden sprinkler rotating as water jets out |  |
| An insect skating across the water surface |  |
| A rope used in a tug of war competition |  |
| Car tyre skidding when emergency brakes are applied |  |
| A plastic ruler rubbed on hair attracting a stream of water from a running tap |  |
| Methylated spirit rising up a capillary tube |  |
| Removing a small piece of iron form the eye of a patient in hospital |  |
| A stone whirled in a horizontal plane maintaining motion in a circular path |  |

17) (a) Describe how the hydraulic brake system works. (4mks)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

 (b) State ***two*** desirable properties of the brake fluid. (2mk)

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

End – All the best